

REMARKS/ARGUMENTS:

Claim 9 is amended. Support for the amendment to claim 9 can be found in Figure 1. Claims 9-11 and 17-21 are pending in the application. Reexamination and reconsideration of the application, as amended, are respectfully requested.

The present invention relates to a ceramic circuit board which is constructed by a ceramic substrate and metal circuit plates attached to both surfaces of the ceramic substrate. (Applicant's specification, at p. 1, lines 5-7).

CLAIM REJECTIONS UNDER 35 U.S.C. § 102:

Claims 9 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Yamakawa (U.S. Patent No. 5,229,549). The Applicant respectfully traverses this rejection. Claim 9, as amended, is as follows:

A ceramic circuit board comprising:
a ceramic substrate having a through hole;
a metal column arranged within the through hole; and
metal circuit plates attached to both surfaces of the ceramic substrate in such a way as to stop up the through hole,
wherein the metal circuit plates attached to both surfaces of the ceramic substrate are connected to each other by the metal column,
wherein, between an inner wall surface of the through hole and an outer wall surface of the metal column is secured a space defining a cavity, wherein the cavity is free from any material, and
wherein the space defining the cavity exists along the entire length of the metal column,

and wherein a brazing material is provided on each end of the metal column, and the brazing material is not connected to the ceramic substrate.

Applicant respectfully submits that Yamakawa cannot anticipate or render obvious claim 9, because Yamakawa fails to teach or suggest a space defining cavity that “exists along the entire length of the metal column” or “wherein a brazing material is provided on each end of the metal column, and the brazing material is not connected to the ceramic substrate.”

The Office states that “Yamakawa does not ever disclose or suggest that material is in this gap.” Applicant respectfully disagrees. Submitted concurrently herewith is an enlarged copy of Figure 6 from Yamakawa. Applicant respectfully submits that from this Figure, it can be seen that parts of the conductor patterns 5 and 6 enter the gap. It is explicitly shown in Figure 6 of Yamakawa that the lower end of the conductor pattern 5 which covers the upper opening of the through-hole 2 is located below the upper end of the metal wire 7, and that the upper end of the conductor pattern 6 which covers the lower opening of the through-hole 2 is located above the lower end of the metal wire 7.

Furthermore, the amendment to claim 9 clarifies the difference between the present invention and Yamakawa. As can be seen from that amendment and Figure 1 of the present application, a brazing material is provided on each end of the metal column; and that brazing material is not (directly) connected to the ceramic substrate.

In contrast, Figure 6 of Yamakawa shows that the conductor patterns 5 and 6 provided on both ends of the metal wire 7 are directly connected to the insulating board 1. The through-hole 2 formed in the insulating board 1 is sealed with the conductor patterns 5 and 6. (Yamakawa, column 2, lines 13-37). Because the

Appl. No. 10/774,551
Amdt. Dated February 2, 2007
Reply to Office Action of November 3, 2006

Attorney Docket No. 81716.0120
Customer No. 26021

conductor patterns 5 and 6 and the insulating board 1 are connected to each other in Yamakawa, Applicant believes Yamakawa cannot achieve an object of the present invention, which is to reduce or eliminate the force acting on the insulating board due to the difference in coefficient of thermal expansion. That is, in Yamakawa, the conductor patterns 5 and 6 extend from the metal wire 7 to the insulating board 1, so that force caused by thermal expansion of the metal wire 7 or conductor patterns 5 and 6 act on the insulating board 1, with the result that a crack or the like that would be prevented in the present invention, is caused in Yamakawa.

In light of the foregoing, Applicant respectfully submits that Yamakawa cannot anticipate or render obvious claim 9, because Yamakawa fails to teach or suggest each and every claim limitation. Withdrawal of this rejection is thus respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. § 103:

Claims 10 and 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamakawa in view of Inoue (U.S. Patent No. 4,816,323). The Applicant respectfully traverses this rejection.

Claims 10 and 11 depend from claim 9 and are patentable over Yamakawa for the reasons discussed above. Inoue cannot remedy the defect of Yamakawa and is not relied upon by the Office for such. Instead, the Office cites Inoue for teaching conductive elements of copper.

In light of the foregoing, Applicant respectfully submits that the cited references cannot render claims 10 and 11 obvious, because the cited references fail to teach or suggest each and every claim limitation. Withdrawal of this rejection is thus respectfully requested.

Appl. No. 10/774,551
Amdt. Dated February 2, 2007
Reply to Office Action of November 3, 2006

Attorney Docket No. 81716.0120
Customer No. 26021

Claims 17-21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamakawa. The Applicant respectfully traverses this rejection.

Claims 17-21 depend from claim 9 and are therefore, patentable over Yamakawa for the reasons discussed above. Withdrawal of this rejection is thus respectfully requested.

Applicant believes the foregoing amendments comply with requirements of form and thus may be admitted under 37 C.F.R. § 1.116(b). Alternatively, if these amendments are deemed to touch the merits, admission is requested under 37 C.F.R. § 1.116(c). In this connection, these amendments were not earlier presented because they are in response to the matters pointed out for the first time in the Final Office Action.

Lastly, admission is requested under 37 C.F.R. § 1.116(b) as presenting rejected claims in better form for consideration on appeal.

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (310) 785-4600 to discuss the steps necessary for placing the application in condition for allowance.

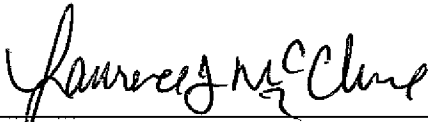
Appl. No. 10/774,551
Amdt. Dated February 2, 2007
Reply to Office Action of November 3, 2006

Attorney Docket No. 81716.0120
Customer No. 26021

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,
HOGAN & HARTSON L.L.P.

Date: February 2, 2007

By: 
Lawrence J. McClure
Registration No. 44,228
Attorney for Applicant(s)

1999 Avenue of the Stars, Suite 1400
Los Angeles, California 90067
Phone: 310-785-4600
Fax: 310-785-4601